

## 2024-2025 MCB Area of Interest Course Information

### Microbiology, Infection, & Immunity

Please check the University of Washington Time Schedule for the most updated course information.

#### FOUNDATIONAL COURSES

**Note:** This track is broadly divided into the related sub-tracks of immunology, virology, and bacteriology. The foundational courses include two courses focused on each sub-track, denoted as 1=Immunology, 2=Virology, and 3=Bacteriology. Interested students can focus on one sub-track or mix and match from these sub-tracks depending on their specific area of research. Area directors or more senior MCB students can discuss these sub-tracks with interested first-year students.

##### Foundational Course 1A:

**Course Number:** IMMUN 532

**Course Title:** Intersection of Innate and Adaptive Immunity in Disease (“Advanced Immunology”)

**Instructor (s):** Elia Tait-Wojno

**Location:** SLU

**Credits:** 4

**Quarter, Weeks, and Frequency course is offered:** Winter, weeks 1-10, every year. *Will be offered in Winter 2025*

**Attributes:** Graded, lecture based, extensive discussion of primary literature.

**Sub Area (if applicable):** Immunology

**Synopsis:** This is the primary graduate-level survey of immunology. Many lectures are given by guest lecturers from the Dept. of Immunology who are renowned experts in these topics. Lectures are complemented by discussion and critique of relevant primary literature.

**Prerequisite(s):** Intro to Immunology course (e.g. IMMUN 441), or equivalent; coursework in molecular genetics; graduate standing in immunology; other graduate students with permission of instructor.

##### Foundational Course 1B:

**Course Number:** IMMUN 537

**Course Title:** Immunological Methods

**Instructor (s):** Andrew Oberst, Mark Headley

**Location (e.g., UW, FH, SLU):** SLU

**Credits:** 1.5

**Quarter, Weeks, and Frequency course is offered:** Autumn, weeks 6-10, every year. *Will be offered in Autumn 2025*

**Attributes (e.g., graded, lecture-based):** Graded, lecture based.

**Synopsis:** Introduces whole animal, cellular, biochemical, and molecular techniques used in immunological research. Discusses strengths and limitations of each technique and emphasizes caveats in interpreting the resulting data.

##### Foundational Course 2A:

**Course Number:** MCB 532

**Course Title:** Human Pathogenic Viruses

**Instructor (s):** TBD

**Location:** FH

**Credits:** 3

**Quarter, Weeks, and Frequency course is offered:** Autumn, weeks 1-10, odd years. *Will be offered in Autumn 2025*

**Attributes:** Graded, lecture based, extensive discussion of primary literature.

**Sub Area (if applicable):** Virology

**Synopsis:** Students will learn basic and advanced concepts in virology by focusing on major groups of human pathogenic viruses. The major emphasis will be on virus replication, evolution, and pathogenesis.

Foundational Course 2B:

**Course Number:** MICROM 540

**Course Title:** Virology

**Instructor (s):** TBD

**Location:** SLU

**Credits:** 3

**Quarter, Weeks, and Frequency course is offered:** Autumn, weeks 1-10, even years. *Will be offered in Autumn 2026*

**Attributes:** Graded, lecture based, extensive discussion of primary literature.

**Sub Area (if applicable):** Virology

**Synopsis:** The molecular biology, transmission, and pathogenesis of human viruses will be explored. In addition to general principles of virology, lectures and paper discussions will focus on specific human pathogens including HIV, herpesviruses, ebolaviruses, alphaviruses, and adenoviruses, among others.

Foundational Course 3A:

**Course Number:** CONJ 558

**Course Title:** Fundamentals of Prokaryotic Biology

**Instructor (s):** Carrie Harwood

**Location:** UW

**Credits:** 1.5

**Quarter, Weeks, and Frequency course is offered:** Winter, weeks 6-10. *Will be offered in Winter 2025 (last offering of this class)*

**Attributes:** Graded, lecture based, extensive discussion of primary literature.

**Sub Area (if applicable):** Bacteriology

**Synopsis:** Basic principles in prokaryotic cell structure, genomics, and metabolism. Introduction to prokaryotic physiology, bacterial pathogenesis, and microbial ecology.

Foundational Course 3B:

**Course Number:** MICROM 553

**Course Title:** Molecular Interactions of Bacteria with their hosts

**Instructor (s):** TBD

**Location:** SLU

**Credits:** 3

**Quarter, Weeks, and Frequency course is offered:** Spring, weeks 1-10. *Will be offered in Spring 2026*

**Attributes:** Graded, lecture based, extensive discussion of primary literature.

**Sub Area (if applicable):** Bacteriology

**Synopsis:** The processes bacteria employ to shape interactions with their hosts will be explored in molecular detail through selected examples in the literature.

## ELECTIVE COURSES

### Elective Course One:

**Course Number:** CONJ 518

**Course Title:** Molecular Biology and Immunology of HIV and AIDS

**Instructor (s):** TBD

**Location:** UW

**Credits:** 1.5

**Quarter, Weeks, and Frequency course is offered:** Spring. *Course is not currently being offered*

**Attributes:**

**Sub Area (if applicable):** Virology

**Synopsis:** Intended for a broad array of science and public health majors. Will cover history of AIDS pandemic, and methodology and current progress in AIDS pathogenesis, vaccine development and cure research. **Prerequisite(s):** BIOL 200.

### Elective Course Two:

**Course Number:** CONJ 539

**Course Title:** Modern Approaches to Vaccines

**Instructor (s):** Deborah Fuller

**Location:** SLU

**Credits:** 1.5

**Quarter, Weeks, and Frequency course is offered:** Spring, weeks 6-10, every year. *Will be offered in Spring 2025*

**Attributes:** Lecture based, extensive use of primary literature

**Sub Area (if applicable):** Virology and Immunology

**Synopsis:** Covers selected topics based on recent publications in viral and bacterial vaccine research. Emphasizes understanding the latest advanced and issues in vaccine discovery, mechanisms of action, and special topics in viral vaccines.

### Elective Course Three:

**Course Number:** CONJ 551

**Course Title:** Immunity

**Instructor (s):** TBD

**Location:** UW

**Credits:** 1.5

**Quarter, Weeks, and Frequency course is offered:** Spring. *Course is not currently being offered*

**Attributes:**

**Sub Area (if applicable):** Immunology

**Synopsis:** Provides an understanding of the central cellular and molecular players in the mammalian immune system at a level appropriate for the non-specializing graduate student. Selected topics include the molecular basis of B and T cell activation and effector functions and the mechanisms of innate immunity.

### Elective Course Four:

**Course Number:** CONJ 557

**Course Title:** Microbial Evolution and Ecology

**Instructor (s):** Evgeni Sokurenko

**Location:** UW

**Credits:** 2

**Quarter, Weeks, and Frequency course is offered:** Spring, weeks 1-5, every year. *Will be offered in Spring 2025*

**Attributes:** Lecture based, extensive use of primary literature

**Sub Area (if applicable):** Bacteriology

**Synopsis:** Selected topics in microbial evolution including evidence for early life on Earth, molecular mechanisms of bacterial and viral evolution, speciation, adaptive niche differentiation, bioinformatics tools to detect selection, and evolution of the virulence and pandemic spread. **Prerequisite(s):** MICROM 412 or general biology background

Elective Course Five:

**Course Number:** GLOBAL HEALTH 566 (offered jointly with PABIO 551)

**Course Title:** Biochemistry and Genetics of Pathogens and Their Hosts

**Instructor (s):** Andrew McGuire, Noah Sather

**Location:** UW

**Credits:** 4

**Quarter, Weeks, and Frequency course is offered:** Autumn, weeks 1-10, every year. *Will be offered in Autumn 2025*

**Attributes:** Lecture based, extensive use of primary literature

**Sub Area (if applicable):**

**Synopsis:** Provides a strong foundation in biochemistry, molecular biology, and genetics for students interested in disease. Principles illustrated through examples focusing on pathogens, and infectious and non-infectious disease. **Prerequisite(s):** Undergraduate-level coursework in molecular biology or biochemistry, or permission of instructor.

Elective Course Six:

**Course Number:** IMMUN 441

**Course Title:** Introduction to Immunology

**Instructor (s):** TBD

**Location:** UW

**Credits:** 4

**Quarter, Weeks, and Frequency course is offered:** Autumn, weeks 1-10, every year. *Will be offered in Autumn 2025*

**Attributes:** Lecture based

**Sub Area (if applicable):** Immunology

**Synopsis:** This is an undergraduate class that presents a complete introduction to immunology. MCB students interested in this topic who have not taken a basic immunology course are encouraged to take or audit this course in preparation for more advanced immunology courses.

**Note:** Students must obtain approval from the MCB Co-Directors for this 400-level class to count toward their 18-graded credits. **Prerequisite(s):** BIOL 220

Elective Course Seven:

**Course Number:** IMMUN 538

**Course Title:** Immunological Based Diseases and Treatments

**Instructor (s):** TBD

**Location:** SLU

**Credits:** 2

**Quarter, Weeks, and Frequency course is offered:** Spring. *Course is not currently being offered*

**Attributes:** Lecture based, extensive use of primary literature

**Sub Area (if applicable):** Immunology

**Synopsis:** Addresses the mechanisms leading to the development of immunologically based diseases. In particular, covers immunological basis and treatment of infection, autoimmunity, and cancer.

Elective Course Eight:

**Course Number:** PABIO 552

**Course Title:** Cell Biology of Human Pathogens and Disease

**Instructor (s):** Kevin Hybiske, Stephen Polyak

**Location:** UW

**Credits:** 4

**Quarter, Weeks, and Frequency course is offered:** Winter, weeks 1-10. *Will be offered in Winter 2025*

**Attributes:** Lecture based, extensive use of primary literature

**Sub Area (if applicable):**

**Synopsis:** Cell biology and immunology explored through diseases of public health importance. Examples of pathogen interaction with host cell biology and immune systems, unique aspects of the cell biology of pathogens, perturbations of these systems in non-infectious diseases, and design of therapeutics and vaccines to combat diseases of public health importance.

**Prerequisite(s):** Undergraduate-level coursework in biology or molecular biology or permission of instructor.